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SSORP Guidance Committee
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Draft Outlines for:
Section 1 - O&M PROGRAM TASKS
Section 2 - FOG PROGRAM
Section 3 - CIP PROGRAM

Section 1
O&M PROGRAM TASKS for Separate Sanitary Sewer Systems

(THIS DOCUMENT DOES NOT DEFINE THE NECESSARY SITE SPECIFIC FREQUENCIES FOR THESE TASKS)

Draft developed by:
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May 14, 2004 version

PREDICTIVE MAINTENANCE PROGRAM - planned and scheduled to assess conditions

Pipe CCTV or by staff entry as indicated

Initial inspection prior to acceptance of CIP or rehab

Periodic system re-inspection

Detailed inspection of deteriorated areas prior to repair/rehab/replacement

Quality Control on line cleaning, root cutting, etc.

Standardized defect coding system needed such as NASSCO PACP.
Checking for pipe condition, depth and/or percentage of concrete spalling, depth of corrosion, pH

Manhole and pump station wetwell structure inspections

- Visual from surface
- Staff entry as indicated for detailed evaluation
- Standardized defect coding system needed
- Should also cover: Manhole concrete or protective coating condition, shelf condition and material loss, debris, roots, roaches/vermin, crown pH, flow D/d (Depth of water/diameter of channel), velocity, turbulence, H2S levels

- Easement and Right of Way surface inspections
  - Checking for vandalism, potential problems due to vegetation, land movement, surface erosion, illegal improvements that limit access, etc.
- Mechanical/Electrical/Instrumentation/Telemetry equipment inspections
  - Pump impeller clearance
  - Vibration levels to detect bearing or other lateral or torsional imbalance

  - Thermal imaging of electrical systems
  - Calibration checks on instrument devices
  - Metallic pipe wall thickness measurements as indicated for corrosion or wear
  - Other tasks as based on sophistication of program
- Facility Structures and Grounds
  - General structural, roofing, architectural, green and hardscape inspection

PREVENTIVE MAINTENANCE PROGRAM – planned and scheduled to ensure desired reliability and level of service

- Gravity pipe systems:
  - Line Cleaning – small diameter thru 12 inch diameter
    - Hand rodding, mechanical rodding, hydro and/or combination cleaning to minimize blockages, settled debris, grease accumulation
    - Root cutting and chemical root growth control programs
    - Specialized lateral maintenance programs if city/agency has lateral responsibility
- Line Cleaning - medium diameter 15 thru 60 inch?
  - Cable rigged buckets, balls, bags or other tools to re-suspend solids or remove various debris and grease accumulations
- Line Cleaning – large diameter above 60 inches?
  - Cable rigged buckets or other specialized tools to re-suspend solids or physically remove heavy debris and grease accumulations. Staff entry may also be indicated with specialized equipment
- Cleaning of siphon inlet structures to remove grease and floatables by manned entry or vacuum equipment
- Crown spraying of bare concrete pipe or structures with Magnesium Hydroxide or other suitable material to protect from acid attack for short and long-term preservation of structure until CIP is indicated
- Chemical dosing to reduce hydrogen sulfide generation and odors, wetwell grease build up (consult with downstream WWTP operators prior to developing chemical programs)
- Pressure pipe systems:
  - Valve and slide/sluice gate exercising and maintenance
  - Air and vacuum release valve exercising and maintenance
  - Surge protection device maintenance

  - Pipeline cleaning or pigging as indicated to remove greases, slimes and settled debris as indicated
  - Chemical addition to reduce H2S levels and acid formation if headspace gases exist
  - CCTV if pipe can be isolated and drained
- Pumping facility systems
  - Pump and lift station PM (to be expanded)
- Vacuum type collection systems in some areas? (to be expanded?)

CORRECTIVE MAINTENANCE PROGRAM – not scheduled and response based only

- Spill Response Programs to written plans from initial notification thru close out reporting (can be expanded in separate documents if needed)
- Emergency response programs for phone line telemetry and electrical utility power outages
- Emergency point repair of piping, manholes, equipment, components or structures
- Emergency Rehabilitation or spot repairs
- Replacement of non critical items such as light bulbs and non-process components and parts

This can also be used as best practice guidance for developing programs for privately owned and operated systems

Section 2
Outline for Fats, Oils, Grease (FOG) Program Development

Developed by Tri TAC's - Cal FOG Workgroup
thru Trish Maguire - Chair
9/30/04 version

The following outline provides various tools jurisdictions can use to assess if a FOG control program is needed to prevent and reduce FOG related sanitary sewer overflows within their jurisdiction. Once a jurisdiction has determined a FOG program is necessary, the jurisdiction may use the following outline as a guide/tool to help determine which elements are appropriate or applicable for their program.

- Assess Sewer System Problems
  - Determine if problem is related to FOG

  - If not FOG alone, determine other contributing factors
    - Roots
    - Poor line maintenance
    - Line repair needed
    - Improperly sized line
    - Rank and prioritize

- Inventory and Characterize Potential Sources
  - Potential sources
    - Food Service Establishments (FSEs) (includes restaurants, hospitals, nursing homes, grocery stores, caterers & commissaries)
    - High density multi-family dwellings
    - Residential – single family dwellings (SFD)
    - Food manufacturing (industrial)
  - Potential for sewer system blockages or overflows
    - Individual discharge
    - Hotspots

- Identify Legal Authority to impose FOG program requirements
  - Program structure
    - Ordinances (ex: standard sewer use ordinance, FOG control ordinance)
    - Permit
    - Local codes
    - Other regulatory means (ex: sewer use agreement, 40 CFR 403.5)
  - Inspection program and enforcement authority
  - Jurisdiction's regulatory authority over private and public property
  - State Plumbing Code requirements and enforcement
  - Other applicable local codes (ex: health, building, and planning codes)

- Program Structure Options (Approach)
  - FSEs
    - Ordinance
    - Permit
    - Educational
    - Incentive-based
  - High density multi-family dwellings
    - Educational
  - Residential – single family dwelling
    - Educational
  - Food manufacturing (industrial)
    - Local sewer use ordinance
    - 40 CFR 403.3 (pretreatment program)

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- Public Education and Outreach
  - FSEs
  - Residential
  - Special events – service clubs, fairs, turkey fryers
  - Green business programs
- Grease removal technology
  - Design and sizing
    - Grease interceptor
    - Grease trap
    - Coordinate installation with local health authority and building/planning departments
  - Maintenance
    - Cleaning schedules
    - Record keeping
    - Additives
    - Other removal technologies
- Cost, Cost Recovery and Financial Incentives
  - Identify costs
    - Staff
    - Inspection
    - Increased sewer line cleaning due to grease
    - Grease-related SSO cleanup costs
    - Education and outreach
  - Cost recovery (fees or general funds)
    - Fees (ex: permit, sewer use fees)
    - Noncompliance fees
    - Spill cleanup costs
  - Reduced rates (incentives)
    - No grinder
    - Low interest loans
    - Different rates for compliance vs. noncompliance

Best Management Practices (BMPs)

- Develop BMPs (determine if optional or mandatory practices)
  - FSEs
  - Residential

Monitoring and Enforcement

- Inspection Approach
  - Characterization inspection
    - Distribution of educational materials
    - Determination of grease removal equipment presence

        - Compliance inspection
            - Hot spot or high risk discharge
            - Inspect all FSEs at specified frequency
            - Grease interceptor and grease trap inspections
    - Sampling and Analysis
        - Elevated enforcement measure
    - Enforcement
        - Ensure due process within defined legal authority
        - Escalating (progressive) enforcement structure
    - Satellite system issues/concerns for Regional System owners
- FOG Hauling, Disposal, and Reuse
    - Brown Grease (interceptor and trap grease)
        - Hauling
            - Existing state regulations (CDFA)
            - Local regulations
            - Optional permitting by wastewater agency
            - Optional local recordkeeping requirements
        - Disposal
            - Approved “certified” disposal location
            - Optional volume tracking
            - Illicit dumping
        - Reuse
            - Biodiesel
    - Yellow grease (recyclable)
        - Hauling
            - Licensed renderer
        - Disposal
            - Rendering facility
            - Biodiesel manufacturing facility
        - Reuse
            - Rendered products
            - Biodiesel
- Legislation and codes
    - Uniform Plumbing Code (UPC) – under review
    - ASTM (American Society for Testing and Materials) – under review
    - Other possible future legislation
- Points to Consider
    - Grinder prohibitions
    - Additives

- Lateral line issues (cleaning notifications)
- Legal authority issues within multi-jurisdictional programs

Section 3
Capital Improvement Program (CIP) Scope of Work Outline

DRAFT of 6/14/04 Developed by John Larson

- Operations and Maintenance staff input into Capital Projects (e.g. An effective managed process to capture knowledge to improve the design and construction and reduce life cycle O&M costs)
  - Stakeholder meetings
  - Planning (Identifying problems, determine funds available)
    - Developing and updating a Master Plan
    - Design Storm Process/Criteria
    - Using growth projection information
    - Using Data on Assets from CMMS, inspections, and flow monitoring
  - Design
  - Construction
  - Acceptance
  - Start-up
- Standards for acceptance of new/rehabilitated facilities
  - Pump stations (e.g. Vibration analysis, Warranties…)
  - Gravity sewers (e.g. CCTV, air test)
  - Pressure sewers (e.g. pressure test, bonding, location wire, soil potential)
  - Manholes (e.g. Vacuum Test)
  - Other collection system facilities
- Design and Construction Standards to avoid/mitigate operational problems
  - Pump Stations
    - Staging capacity to accommodate anticipated growth without over sizing facilities
    - Storage Basins (Flow equalization retention)
    - Multiple wet wells to provide holding capacity during maintenance/emergencies
    - Redundant force mains

    Chemical addition (to prolong life of pipe and control odors)
    - Odor control
    - Self-cleaning wet wells (do they work, are they worth it?)

Advantages of flow meters vs. cost

- Gravity sewers
  Minimum size, pipe materials, minimum slope, minimum cover
  - What constitutes an acceptable grade variation?

  What constitutes acceptable deflection?
  - Staging capacity to accommodate anticipated growth without over sizing facilities
- Pressures sewers
  Vertical Profile
  - Air/vacuum relief valves

  Staging capacity to accommodate anticipated growth without over sizing facilities
  - Cleaning facilities
    - Pig Launching

The need for in-pipe, real time flow metering for I/I and baseline conditions and validating the flow model